TASK-2: Prediction using Unsupervised ML - Spark Foundation

Manthan Bhikadiya

Import Dependencies

In [1]:

```
import numpy as np
import pandas as pd
import matplotlib.pyplot as plt
```

In [2]:

```
data = pd.read_csv('iris.csv')
```

In [3]:

```
data.head()
```

Out[3]:

	Id	SepalLengthCm	SepalWidthCm	PetalLengthCm	PetalWidthCm	Species
0	1	5.1	3.5	1.4	0.2	Iris-setosa
1	2	4.9	3.0	1.4	0.2	Iris-setosa
2	3	4.7	3.2	1.3	0.2	Iris-setosa
3	4	4.6	3.1	1.5	0.2	Iris-setosa
4	5	5.0	3.6	1.4	0.2	Iris-setosa

In [4]:

```
data['Species'].value_counts()
```

Out[4]:

```
Iris-virginica     50
Iris-versicolor    50
Iris-setosa        50
Name: Species, dtype: int64
```

In [5]:

```
features = data.iloc[: , :-1].values
```

K-Means

In [6]:

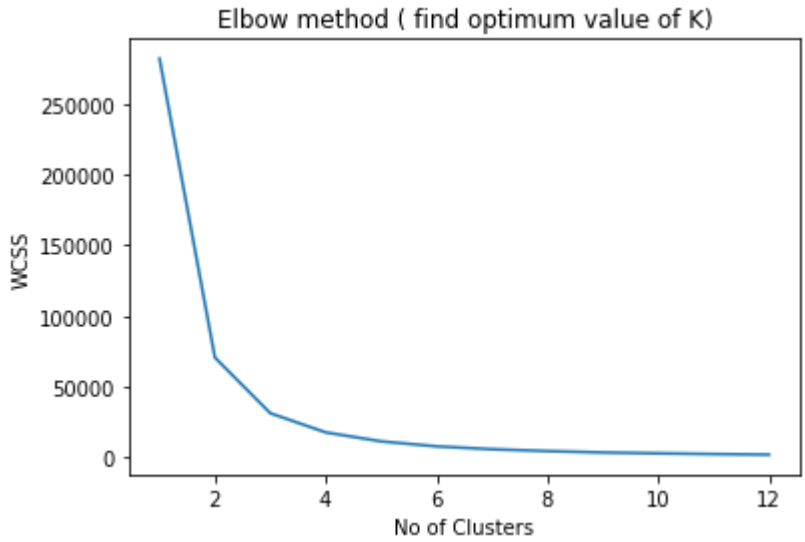
```
from sklearn.cluster import KMeans
```

In [7]:

```
wcss = [] ## Within-Cluster Sum of Square
for i in range(1,13):
    kmeans = KMeans(init='k-means++' , n_clusters = i , random_state = 0)
    kmeans.fit(features)
    wcss.append(kmeans.inertia_)
```

In [8]:

```
plt.plot(range(1,13) , wcss)
plt.title('Elbow method ( find optimum value of K)')
plt.xlabel('No of Clusters')
plt.ylabel('WCSS')
plt.show()
```



In [9]:

```
## Optimum Wcss point where cluster == 3.
## so we take n_clusters = 3 and make the model
```

In [10]:

```
kmeans = KMeans(init='k-means++' , n_clusters = 3 ,random_state = 0)
kmeans.fit(features)
prediction = kmeans.predict(features)
```

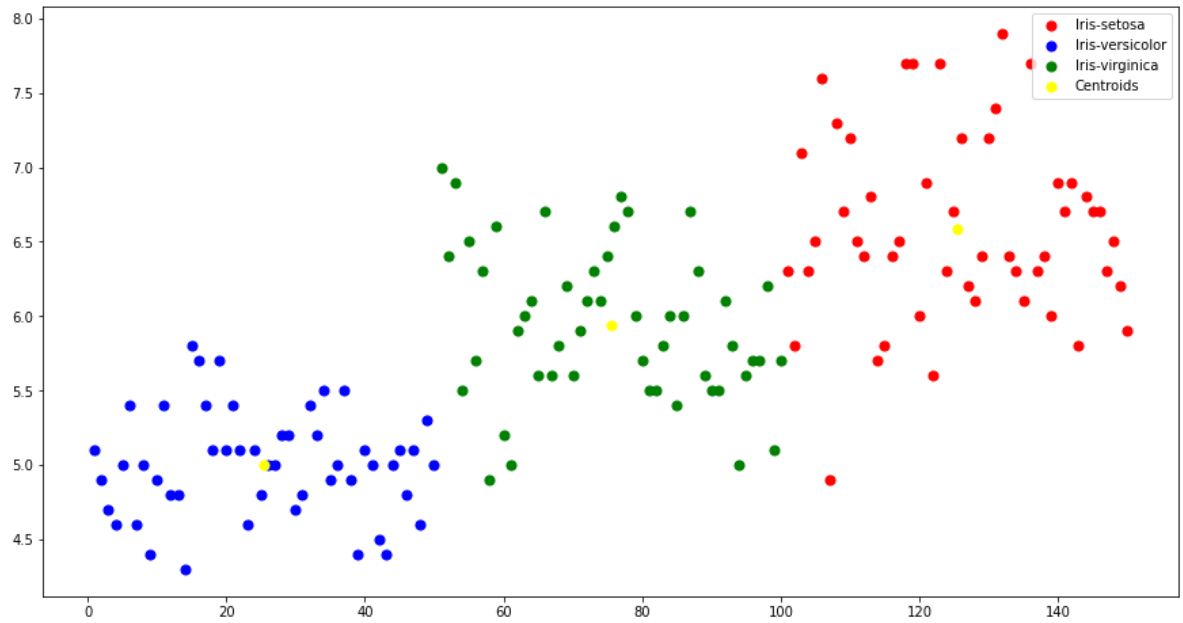
Final Clusters

In [12]:

```
plt.figure(figsize=(15,8))

plt.scatter(features[prediction==0,0], features[prediction==0,1], c="red", s=50, label="Iri
plt.scatter(features[prediction==1,0], features[prediction==1,1], c="blue", s=50, label="Ir
plt.scatter(features[prediction==2,0], features[prediction==2,1], c="green", s=50, label="I

#Plotting the centroids of the clusters
plt.scatter(kmeans.cluster_centers_[:,0], kmeans.cluster_centers_[:,1], c="yellow",
            s=50, label="Centroids")

#descibing the elements of the graph
plt.legend()
```

Out[12]:

```
<matplotlib.legend.Legend at 0x11fa9ced3a0>
```



In [ ]: